NAME _____ DATE _____

Study Guide

Student Edition
Pages 412–419

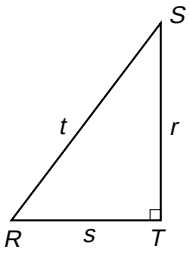
Integration: Trigonometry Ratios in Right Triangles

A ratio of the lengths of two sides of a right triangle is called a **trigonometric ratio**. The three most common ratios are **sine**, **cosine**, and **tangent**. Their abbreviations are *sin*, *cos*, and *tan*, respectively. These ratios are defined for the acute angles of right triangles, though your calculator will give the values of sine, cosine, and tangent for angles of greater measure.

$$\sin R = \frac{\text{leg opposite } \angle R}{\text{hypotenuse}} = \frac{r}{t}$$

$$\cos R = \frac{\text{leg adjacent to } \angle R}{\text{hypotenuse}} = \frac{s}{t}$$

$$\tan R = \frac{\text{leg opposite to } \angle R}{\text{leg adjacent to } \angle R} = \frac{r}{s}$$

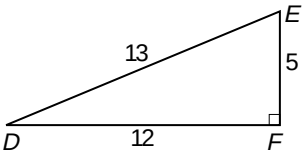


Example: Find sin D, cos D, and tan D. Express each ratio as a fraction and as a decimal rounded to the nearest thousandth.

$$\sin D = \frac{5}{13} \approx 0.385$$

$$\cos D = \frac{12}{13} \approx 0.923$$

$$\tan D = \frac{5}{12} \approx 0.417$$



Find the indicated trigonometric ratio as a fraction and as a decimal rounded to the nearest ten-thousandth.

1. sin M

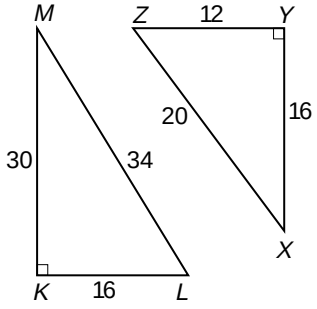
2. cos Z

3. tan L

4. sin X

5. cos L

6. tan Z



Find the value of each ratio to the nearest ten-thousandth.

7. sin 12°

8. cos 32°

9. tan 74°

10. sin 55°